

II. AMENDMENTS TO THE CLAIMS

Claim 1. (Currently Amended) A process for preparing (per)fluorohalogenethers having general formula (II):



wherein:

A and A', equal to or different from each other, are H, Cl or Br but they cannot be both H;

R' has the following meanings:

- RO-, wherein R is a fluorinated or (per)fluorinated substituent, ~~preferably perfluorinated~~, selected from the following groups: linear or branched C₁-C₂₀ alkyl, ~~preferably C₄-C₁₀~~; C₃-C₇ cycloalkyl; aromatic, C₆-C₁₀ arylalkyl or alkylaryl; C₅-C₁₀ heterocyclic or alkylheterocyclic;

when R is fluorinated, it optionally contains one or more atoms of H and/or one or more halogen atoms different from F;

when R is alkyl, cycloalkyl, arylalkyl, alkylaryl, alkylheterocyclic, it optionally contains in the chain one or more oxygen atoms;

- a perfluoropolyether substituent T-R_f

wherein

T = -OCF₂OCFA-CA'F₂, -OCF₂X₁, wherein X₁ = F, CF₃, Cl;

R_f is a perfluorooxyalkylene chain containing one or more of the following units statistically distributed along the chain:

- (C₃F₆O), selected between (CF₂CF(CF₃)O) or (CF(CF₃)CF₂O);
- (CFX₁O) wherein X₁ is F or CF₃;
- (C₂F₄O);
- (CF₂(CF₂)_xCF₂O) wherein x' is an integer equal to 1 or 2;

by reaction of carbonyl compounds having formula (III):



wherein

R'' = RO-, wherein R is as above; or

R'' = Q-R_f wherein:

Q = -OCOF, -OCF₂X₁ wherein X₁ is as above;

R_f is as above;

in liquid phase with elemental fluorine and with olefinic compounds having formula:



wherein A and A' are as above,

at temperatures from -120°C to -20°C, ~~preferably from -100°C to -40°C~~, optionally in the presence of a solvent inert under the reaction conditions.

Claim 2. (Original) A process according to claim 1, wherein the fluorine used in the reaction is diluted with an inert gas.

Claim 3. (Previously Presented) A process according to claim 1 carried out in a semicontinuous or continuous way.

Claim 4. (Original) A process according to claim 3, wherein in the semicontinuous process the molar ratio between the carbonyl compound (III) and the olefin (IV) ranges from 0.05 to 10.

Claim 5. (Original) A process according to claim 3, wherein in the continuous process the molar ratio between the carbonyl compound (III) and the olefin (IV) ranges from 0.05 to 10 and the molar ratio F₂/olefin (IV) ranges from 0.05 to 10.

Claim 6. (Currently Amended) A process according to claim 1, wherein the number average molecular weight of R_f in formula (II) and (III) ranges from 66 to 12,000, ~~preferably from 66 to 1,000, more preferably from 300 to 800.~~

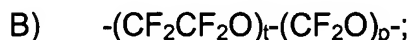
Claim 7. (Currently Amended) A process according to claim 6, wherein the perfluorooxyalkylene chains are selected from the following:

A) -(CF₂-CF(CF₃)O)_m-(CFX₁O)_n;

wherein:

X₁ is as above;

m and n are integers, equal to or higher than zero, ~~and~~ such that the molecular weight of R_f is in the above molecular weight range;



wherein t and p are integers, equal to or higher than zero, ~~and~~ such that the p/t ratio ~~be in~~ is in the range 0.2-4, t being different from zero and the molecular weight of R_f is within the above molecular weight range;



wherein:

X_1 is as above;

t, n, and m are integers, equal to or higher than zero, ~~and~~ such that the molecular weight of R_f is within the above molecular weight range.

Claim 8. (Original) A process according to claim 7, wherein when R_f is structure A) the m/n ratio is ≥ 2 and n is different from zero;

when R_f is structure B), the p/t ratio is from 0.2 to 4, and t is different from zero;

when R_f is structure C), m + t is comprised between 1 and 50; the n/(m + t) ratio is comprised between 0.01 and 0.05, m + t being different from zero.

Claim 9. (Currently Amended) A process according to ~~claim 1~~ claim 7, wherein the perfluorooxyalkylene chain has structure B) $-(\text{CF}_2\text{CF}_2\text{O})_t-(\text{CF}_2\text{O})_p-$.

Claim 10. (Currently Amended) A process according to claim 1, wherein the carbonyl compounds of formula (III) are CF_3OCOF , $\text{C}_2\text{F}_5\text{OCOF}$, or $\text{CF}_3\text{O}(\text{CF}_2)_2\text{OCOF}$.

Claim 11. (Previously Presented) A process according to claim 1, wherein the solvents are liquid and inert in the temperature range of the process and are selected from (per)fluorocarbons, (per)fluoroethers, (per)fluoropolyethers, perfluoroamines, or respective mixtures.

Claim 12. (New) A process of claim 1, wherein R is a linear or branched C_1 - C_{10} alkyl.

Claim 13. (New). A process of claim 1 at temperatures from -100°C to -40°C .

Claim 14. (New) A process according to claim 6, wherein the number average molecular weight of R_f in formula (II) and (III) ranges from 66 to 1,000.

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Claim 15. (New) A process according to claim 14, wherein the number average molecular weight of R_f in formula (II) and (III) ranges from 300 to 800.